GUIDANCE FOR PREPARATION OF COMBINED WORK/QUALITY ASSURANCE PROJECT PLANS FOR ENVIRONMENTAL MONITORING

(OWRS QA - 1)

OFFICE OF WATER REGULATIONS AND STANDARDS
U.S. ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

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FOREWORD

In order to help ensure that EPA's environmental monitoring data is of known quality, the Agency has established specific requirements for development of Quality Assurance Program Plans and Quality Assurance Project Plans. These QA plans are required for environmental monitoring tasks accomplished within EPA, by its contractors and its grantees. By regulation, all QA Project Plans must conform in content with QAMS-005/80 "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans."

This OW Work/QA Project Plan Guidance document was developed in conformance with QAMS-005/80 and has been authorized as an official alternative to that document. The OW document reflects extensive experience in use of QAMS-005/80 and is in itself a product of more than two years of intensive development by a Federal/Regional/State team. The culmination of the development process was a large scale pilot implementation of the OW document beginning in April 1983. During the pilot implementation, the guidance was applied to a wide range of Agency, State and contractor environmental monitoring tasks involving water programs, solid waste programs and Superfund programs. A pilot implementation workshop held in October 1983 indicated uniform concurrence in the clarity and utility of the document by EPA, State and contractor participants. In the meantime, the OW guidance document was selected as the agency-wide model for QA project plan development.

The OW guidance document was prepared to expedite the preparation of water monitoring plans which will ensure practical, cost-effective data acquisition and use. While water monitoring examples are utilized in the guidance for illustration purposes, the guidance has been utilized for and is applicable to other media and program applications including those of RCRA and Superfund.

The document is designed to eliminate the necessity for preparation of multiple documents such as standard work plans and quality assurance projects plans. The format and approach are designed to ensure practical utility recognizing that the detail of each plan can vary widely. Simple tasks will frequently require brief plans. Complex tasks may involve a comprehensive document.

Effective implementation of the guidance document can have a range of important payoffs. Duplication of effort through each State developing its own QA project plan format and procedures will be eliminated, conserving valuable State resources. Economic waste resulting from data acquired at considerable cost and effort - but of limited and often suspect reliability - will be reduced. A basis for combining or excluding data from diverse sources will exist since the quality of each data base will be defined. This latter capability is of special importance in such areas as cooperative monitoring where the data of the regulated community may be co-mixed with other data sources.

Additional information on implementation and updates of the guidance document can be obtained from Martin W. Brossman, QA Officer, EPA (WH-553) Washington, D.C. 20460.

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Introduction

I. Need for a QA Guidance Document

Good professional practice dicates that environmental measurement tasks be adequately conceived, documented and executed so that the resulting data can be used with some definable degree of confidence. Formalization of sound Quality Assurance/Quality Control (QA/QC) procedures can help ensure control and documentation of data quality. However, unless such procedures are built into the standard documents and practices utilized to develop, administer, and evaluate environmental measurement tasks the procedures can become a marginally useful and burdensome requirement.

This guidance document has been developed to facilitate the incorporation of sound and useful QA/QC practices into environmental measurement tasks performed with financial assistance from the Environmental Protection Agency and/or mandated under Environmental Regulations, which the Agency is responsible for administering.

Under the Agency's mandatory Quality Assurance Program all its in-house and externally supported efforts must incorporate sound Quality Assurance procedures. A key requirement is the Quality Assurance Project Plan. In order to implement this requirement the Agency has developed a generalized Quality Assurance guidance document, QAMS-005/80, for multimedia use. Experience with QAMS-005/80 indicated the need to: refine the guidance; better describe the elements of QA planning; logically combine a work plan with QA planning; and provide practical examples to assist in preparation of the QA plans. It was particularily apparent that effective implementation

of QA/QC requirements, required combining the features of a QA Project Plan with a work plan. Thus a single document would eliminate the dual effort of preparing two plans and assure the practical incorporation of QA/QC controls.

Development Process

The EPA guidance development task force was constituted in April 1982 consisting of the lead representative from the Office of Water (OW), a representative from the Quality Assurance Management Staff (QAMS), and Quality Assurance Officers (QAO's) from EPA Regions II, III and VII. These Regional QAO's are responsible for all media programs. Their ample experience in water, air, solid waste and hazardous materials QA applications was especially valuable.

This initial team met in July 1982 to formulate a development approach and schedule (see Exhibit #1). State representatives were quickly selected to complement the task force. (The task force composition is shown in Appendix A.) An initial evalution of QAMS-005/80 "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans" was conducted. Based on a review of QAMS-005/80 and the team's application experience with the document, a development package was produced. The package consisted of a description of the new approach rationale, a document outline, specific assignments and the schedule depicted previously in Exhibit #1.

In undertaking this effort a range of technical and practical issues were addressed, including:

GUIDANCE DOCUMENT DEVELOPMENT SCHEDULE
APRIL 1982 - APRIL 1983

Date		Activity
4/22/82	-	Establish Task Force of Headquarters and Regional QA Officers
7/12,13/82	-	Task Force work session (resolve aproach, document outline, assignments, schedule.)
7/16/82	-	Complete development package, mail out for Task Force review.
7/21/82	-	Complete development package review (Task Force call in and mail revisions to Martin Brossman.)
7/23/82	-	Incorporate Task Force revisions into development package. Mail out to Task Force members.
7/27/82	-	Present concept and development plan to QA/QC Sub Group of Standing Working Group on Water Monitoring and Wasteload Allocation.
7/30/82	-	Regional Task Force members finalize selection of State Task Force members.
7/30/82	-	Development package sent to Regions for Region/State review.
7/30/82	-	Task Force begins initial draft of guidance document (see individual assignment list - products due as available with <u>all</u> inputs due 9/1/82.)
8/27/82	-	Region/State comments due on development package.
9/1,2/82	-	Task Force work session to incorporate Region/State comments, and revise development package. Review initial draft inputs. Develop new guidance document outline, task force assignments, and revised development schedule.
11/15/82	-	Draft guidance document/development package out for review to Regions/States and Standing Working Group on Water Monitoring and Wasteload Allocation.
1/4/83	-	Comments on draft guidance document and development package due.
1/20 - 21/83	-	Task Force work session for revision of guidance document and planning pilot implementation schedule.
4/15/83	-	Guidance document completed and ready for pilot implementation by Regions/States.

(1) How can Quality Assurance/Quality Control (QA/QC) be effectively integrated into current procedures without creating undue burden while increasing the utility of the data?

(2) How can flexibility be built into QA/QC guidance such that simple and comprehensive environmental measurement tasks can all be accommodated with "appropriate" coverage?

(3) What constitutes a "project" or "task?"

(4) What range of environmental measurement tasks can be accommodated under a QA/QC guidance document?

(5) How can Federal QA/QC requirements be effectively adapted and updated for State use to ensure requirements are met while variations in State procedures and requirements are accommodated?

The issues previously described dominated the development of this guidance document and led to the following resolutions and characteristics:

(1) The QA/QC aspects should be integrated by combining the features of a QA project plan with a work plan. Thus, a single document eliminates the dual effort and assures practical incorporation of QA/QC controls.

(2) Flexibility in utilization of the guidance for comprehensive tasks and those of limited scope was to be achieved by retaining the basic elements for small and large scale efforts but modifying the detail. For example, in relatively simple or routine tasks or sub-tasks of a larger program the information may be covered by a simple reference to a SOP or the major program document. In the same way, for cases where a State already has an "official" work plan requirement, the appropriate elements could be included in the guidance document by reference.

(3) The decision as to what constitutes a task or "project" admittedly is a somewhat subjective one. However, the combination Work/QA project plan must be comprehensive and detailed enough to cover the task or projects in a definitive way.

(4) The document was to be designed to cover all aspects of water environmental measurement from network design to field sampling through laboratory analysis and data reduction and, where applicable, computer input.

(5) The problem of developing a document meeting both Federal and State requirements was addressed through constitution of a Federal, Regional, State task force for development and implementation. Furthermore, the development and implementation effort has been designed to provide continuing update, expansion and improvement of the guidance.

The guidance objectives were carefully addressed throughout the development and review process. On-going Federal, Regional, and State inputs were assured through the task force makeup. The development concept plans and draft guidance document were critiqued by each of EPA's Regions and selected State reviewers from these Regions. In addition, the same materials were reviewed by the QA/QC subgroup of EPA's Standing Working Group on Water Monitoring and Wasteload Allocation. This Group was constituted of technical personnel from ASIWPCA, USGS, Industry and environmental groups.

The final test of the utility of the guidance document was the pilot implementation scheduled to begin in April 1983. Exhibit #2 shows the schedule developed to carry out the pilot implementation and subsequent planned steps in guidance development and implementation. Pilot implementation was to consist of introduction of this guidance in the "normal course of business" by Federal, Regional and State task group members. The process was to be as natural possible to "shake out" problems and evaluate the clarity and

Exhibit #2

GUIDANCE DOCUMENT DEVELOPMENT SCHEDULE
APRIL 1983 - OCTOBER 1983

Date		Activity
04/15/83	-	Guidance Document distributed for pilot implementation. (State use in ambient monitoring and intensive surveys. State and contractor use in RCRA and Superfund programs)
04/15/83	-	Implementaton support (ongoing) provided as needed. (Va. State Water Control Board, N.J. Dept. of Environmental Protection etc.) Develop, on on-going basis, concepts for a nationwide implementation. Plans include workshop for pilot implementation participants and National/Regional workshops for FY 84.
06/06-10/83	-	Program Plan/Project Plan implementation meetings for six States of Region I (Separate meetings with Water Program staffs & consolidated lab staffs in each state.) Original plan of briefing on OW guidance document expanded to include: FY 84 QA grant requirements (40CFR Part 30); QA Program Plan requirements; and OW Project Plan guidance document.
06/27-30/83	-	Guidance document task force members meet at QA Officer's Meeting, San Francisco to develop draft user inquiry critique for States & contractor's utilizing document in pilot implementation.
07/22/83	-	Pilot implementation inquiry packages developed and provided to task force members. (Package consists of memo requesting responses to nine questions on pilot implementation.)
08/15/83	-	Responses to pilot implementation inquiry due. Initiate analysis of responses and planning for Fall workshop based upon responses.
10/26,27/83	-	Fall workshop on pilot implementation (Participants to include State representatives, contractors, task force members and Regional QAO's participating in National/ Regional project plan workshops in Spring FY 84.)
10/28/83	-	Critique of workshop inputs and plans for Guidance Document expansion/revision.
12/31/83	-	Guidance Document revised with summary of findings and recommendations from pilot implementation.

effectiveness of the guidance.

A description of planned and already on-going applications of the guidance as of April 1983 is included as Appendix B. Followup of the pilot implementation was conducted through a user inquiry form shown in Exhibit #3 and the October 1983 workshop on the pilot applications. Application areas included ambient water monitoring, intensive surveys, and permit compliance monitoring. Media applications included water program, RCRA and Superfund areas. In addition to the use of the guidance in QA plan development, some States - including Pennsylvania - used the document as a training device on monitoring and as a guide in developing specific State-wide quality assurance programs. Brief summaries of many of the pilot applications are included in Appendix C.

The pilot implementation and resulting workshop indicated that the two year Federal/State development and refinement process involved in the guidance document had yielded a highly useful and versatile guide for development of QA Project Plans. Based upon the pilot implementation, the workshop, and additional responses to the user inquiry form, it was included that the guidance document was ready for nationwide implementation. It was also apparent that a number of technical developments could further greatly assist States and contractors to improve the quality of their plans. The proposed nationwide implementation schedule and technical development areas are depicted in Exhibit #4. The concept reflected in this schedule involved the production of a "loose-leaf" guidance document which could be expanded on a periodic basis as new technical development inputs were available. Each new development was to be fully critiqued and pilot tested prior to issuance. Resource constraints and the impact of other priorities have thus far delayed these additional developments. However the

Exhibit #3

To: Users of the EPA "Guidance for Preparation of Combined Work Assurance Project Plans for Environmental Monitoring"

From: Martin Brossman, Quality Assurance Officer, EPA (WH-553)

Application Experience

You have been identified as having utilized the subject Quality Assurance guidance in a water (or other media) monitoring project. In order to help us improve this guidance, we would like some feedback from you on your application. We would appreciate a response to the following:

(1) Title of project and a very brief description.

(2) Which sections of the guidance, corresponding to numbers 0 through 19 in the Table of Contents, were unclear to you? Explain.

(3) Which sections of the guidance were not relevant to your project? Explain.

(4) Would it be helpful if we provided you with "text" for some of the sections? (This might include standardized statements for sections on data quality requirements, corrective action, and data validation.)

(5) Would "generic" plans be helpful to you in conjunction with the guidance document? (This might include a large scale ambient water monitoring network project, and an intensive survey etc.)

(6) Can you suggest any items not covered in the guidance which were critical for planning to ensure quality data?

(7) Do you plan to continue using this type of QA plan approach for future monitoring projects?

(8) If the above answer is no, what alternative approach do you plan to use?

(9) Additional comments. (A copy of your QA plan will be helpful).

Users' Workshop

A Users' Workshop will be held in the Fall of 1983 in Washington, DC. This Workshop will be used to discuss your utilization and set priorities for expansion of our guidance document. Please provide your name, complete address and telephone number along with those of other colleagues who may be interested in attending.

Responses

Please return your responses by August 15, 1983 to:

Martin Brossman, Quality Assurance Officer (WH-553)
Environmental Protection Agency
Washington, DC 20460
Telephone: (202) 382-7040

Exhibit #4

GUIDANCE DOCUMENT DEVELOPMENT SCHEDULE

Date		Activity
1/27/84	-	Detailed guidance document development schedule completed based on pilot effort. Structure for "loose leaf" coded guidance document resolved. Funding and publication issues resolved (Contract support established through OW or ORD.) Plans for National/Regional workshops. (Note the following are tentative schedules.)
3/26/84	-	Guidance manuals published for distribution and use at National/Regional QA Project Plan Workshops.
04/16/84-05/11/84	-	Regional QA Project Plan two day workshops conducted for Regions 1, II, III, V, VIII, IX, and X.
05/01/84 9/30/84	-	Guidance document development tasks in conformance with schedule developed on 1/27/84. Extent of task development dependent on contract support, and/or State support.

(1) Development of data quality objectives guidance including precision, accuracy, comparability, completeness, representativeness etc.

(2) Expansion of sections on; (a) documentation, (b) data reduction, data management and reporting, and (c) data validation.

(3) Development of generic project plans.

(4) Development of SOP references for use with project plans.

(5) Development of implementation guidelines based on State experience - interdepartmental coordination, organization, assignment of responsibilities, resource implications, administrative procedures etc.

(6) Analysis and incorporation of QA biomonitoring approaches.

(7) Support to other programs on adaptations of OW guidance. (Supported program to provide funding or staff augmentation.)

(8) Participation in Monitoring and Wasteload Allocation workshops.

(9) Inputs and descriptions for Monitoring Strategy and adaptation of project plan as required for special OW priority tasks.

wide-spread implementation of the current guidance document will provide useful information when the full development plan can be implemented. In addition to the applications of the guidance document already described, the OW guidance document was recommended as an Agency-wide model in December 1983. The guidance's adaptability is also illustrated by its utilization to develop the QA Plan for EPA's National Dioxin Study in April 1984. This study involves multi-media chemical and biological monitoring. Other Agencies including USGS are considering use of the guidance. The document has been implemented by individuals and staffs of Environment Canada, the International Joint Commission, EPA contractors, and an extensive list of corporations. This broad base of applications combined with the State applications, should provide a wealth of user experience and basis for further improvements.

Use of Guidance Document

A variety of options exist to meet acceptable QA/QC requirements in environmental measurement projects. QA/QC requirements may be incorporated into existing regulations or certification programs. Some States have developed adequate QA Project Plans independently or in collaboration with EPA Regional Offices. This guidance document has been prepared by incorporating the combined experience of the Federal/Regional/State team together with inputs from contractors and industry users. It is recommended that guidance be used for developing work/QA Project Plans for each specific environmental monitoring project or continuing operation.

The guidance document has been developed to afford considerable flexibility in use. If work plans already exist, or are under development

to meet a pre-established requirement, the appropriate sections of those plans can be simply included by reference. In addition, existing Standard Operating Procedures (SOP's) can be referenced. This procedure minimizes preparation time but ensures completeness. Further flexibility is afforded by choice of a more comprehensive narrative format or "short form." Section II of the document provides a structured format and narrative description for developing Work/QA Project Plans covering comprehensive environmental monitoring projects. Section III provides a "fill-in" form utilizing the structured format of Section II to facilitate preparation of plans of more limited scope or plans which can be covered well by reference to SOP's, or more comprehenisve project/program descriptions. Section IV provides an example of an actual Work/QA Project Plan, utilizing the format and narrative guidance described in Section II. The example is not comprehensive since it represents an adaption of an existing water monitoring project description into the suggested Work/QA Project Plan format. However, the example is useful as an application guide.

SECTION II

II. Work/QA Project Plan Guidance

Title Page (With Project Officer, QA Officer and Agency/Division Director signatures.)*

1. Project Name
2. Project Requested By
3. Date of Request
4. Date of Project Initiation
5. Project Officer
6. Quality Assurance Officer
7. Project Description

The purpose of the project description is to define the objectives (goals) of the project and describe how the project will be designed to obtain the information needed to accomplish the project goals. The project description should consist of the following:

A. Objective and Scope Statement

This section should consist of a comprehensive statement addressing the project's objective (purpose) and an overview of the project's scope (activities). Background information pertaining to the project (i.e., reconnaissance information) should be included.

* As illustrated by the Title Pages in Sections II and III, the exact format of this page will vary according to specific State organizations and their designated responsible individuals.

B. Data Usage

This section should consist of a comprehensive statement outlining the intended data usage. It is important to clearly indicate this usage so that suitable sampling, analytical and QA/QC protocols are selected. When applicable, secondary uses of the data should be identified. The following are examples of data uses:

- verify self-monitoring data;
- verify compliance with NPDES permit;
- support permit reissuance and /or revision;
- support other program elements such as water quality standards; and
- possible usage in an enforcement action.

C. Monitoring Network Design and Rationale

This section should address the design of the overall monitoring system, the specific locations of the sampling sites, and the justification for the overall monitoring network design. As discussed in Section II, data representativeness, comparability, and completeness should be considered an integral part of the monitoring design. Other relevant factors which influence the design of the monitoring network should also be considered and reflected in the plan (e.g., homogeneity of the system under investigation, accessibility of the sampling area, stream flow conditions, tidal fluctuation, weather conditions).

D. Monitoring Parameters and Frequency of Collection

This section should discuss the types of parameters to be collected at the various sampling sites. This may be done in tabular form provided the following information is listed:

- sampling site location (e.g., latitude/longitude, River Mile Index, Depth);
- type of sample (e.g., grab sample, cross-sectional stream composite sample);
- sample matrix (e.g., stream surface water, river bottom sediment);
- parameters to be analyzed (e.g., copper, lead); and
- sampling frequency.

"Type of sample" should be only a brief description. A detailed description of the sample collection method will be addressed in Item 12.

E. Parameter Table

This table should provide the following information for each parameter analyzed:

- sample matrix;
- analytical method reference; and
- sample holding time.

The analytical method reference must correspond to that specific procedure which is followed in the laboratory for the analysis of that parameter in that matrix. If an EPA-approved method is used, a citation of the method's reference is sufficient. If

no EPA-approved method is available or if the method to be used is a modification of an EPA-approved method, the method must be validated and documented in detail. The documented method should be made part of the project plan by either incorporation into the laboratory's Standard Operating Procedures (SOP's) or by becoming an attachment to the project plan.

8. Project Fiscal Information (Optional)*

To aid in the planning, control, and the allocation of existing resources and to assist in the documentation and justification for future resources, the financial requirements/expenditures for travel, per diem, mileage, salaries and benefits, clerical services, expendable supplies, laboratory services and any outside contractual arrangements should be delineated. In addition, major equipment items such as automobiles, trucks, boats, helicopters, drilling equipment, special safety equipment, etc., required to implement the study plan for the project, should be specified and the source and cost of each item identified. A factor for administrative overhead cost may also be computed to complete the fiscal picture.

9. Schedule of Tasks and Products

The progress of the project from conception to implementation should be followed. It is necessary to plot each phase of the project contained in the project schedule, from initial request to final project report.

* This section is optional depending on existing State procedures.

This includes:

- the date of the request which initiates the project;
- the date by which the project plan will be submitted to all interested parties;
- the date by which comments on the plan are to be received by the project officer;
- the date(s) of the field reconnaissance;
- the date(s) of the field sampling activities;
- the date(s) the samples will be submitted to the laboratory for analysis;
- the date(s) by which all analyses are to be completed and the data submitted to the project officer;
- the date(s) the data will be entered into STORET or other computerized systems;
- the date of the completion of the draft interim/final project report;
- the date by which the reviewers' comments on the report(s) must be received;
- the date for completion of the peer review process; and
- the date for the issuance of the final project report.

Each step in this process should be scheduled in an objective and realistic time frame to assure that adequate attention is devoted to the minimization of effort and the maximization of information.

10. Project Organization and Responsibility

In order for a monitoring study to proceed smoothly and yield valid and useable data, it is essential that all individuals are clearly informed.

of their responsibilities. The Project Organization and Responsibility Section of the Work/QA Project Plan should, at a minimum, identify key individuals responsible for:

- sampling operations
- sampling QC.
- laboratory analyses
- laboratory QC.
- data processing activities
- data processing QC.
- data quality review
- performance auditing
- systems auditing (on-site evaluations)
- overall QA
- overall project coordination

It is often useful on a project to indicate how these individuals relate in the organization(s). An organizational chart is a convenient way of illustrating this.

For each key individual named, a brief sentence or two explaining that individual's responsibility should suffice. Telephone numbers should be listed with the key individuals in order to facilitate communications.

Where there are several different monitoring institutions or subcontractors involved, complete addresses should be provided.

11. Data Quality Requirements and Assessments

It is important in project planning that a cooperative effort be undertaken by the project officer, sampling, and analytical personnel to define what levels of quality shall be required for the data. These data quality requirements shall be based on a common understanding of the intended use of the data, the measurement process, and availability of resources. Once data quality requirements are clearly established, QC protocols shall be defined for measuring whether these requirements are being met during the study.

As a minimum, requirements should be specified for detection/quantitation limits, precision, and accuracy for all types of measurements, where these are appropriate. A procedure for determining method detection limits is covered in "Methods for Organic Chemical Analysis for Municipal and Industrial Wastewater," EPA 600/4-82-057.

Customarily, laboratory personnel provide the project officer with method options covering a given parameter and type of sample. These options are accompanied by respective detection/quantitation limits and statements of precision and accuracy. Once the method options are selected, the detection/quantitation limit, precision, and accuracy requirements should be incorporated into the Work/QA Project Plan. Along with each requirement, there should be a protocol for monitoring whether these requirements were met. For example, intralaboratory precision can be monitored by using replicate samples. Accuracy can be monitored with the use of field and method blanks, spikes, surrogate spikes, National Bureau of Standards' Standard Reference Materials (SRM's), EPA QC reference samples, etc.

Wherever possible criteria should be set for the "total measurement." This could be accomplished, for example, with the use of field replicate samples.

Frequency of QC sample analysis and statistical reporting units shall be defined in the Work/QA Project Plan.

When discussing data quality requirements, consideration should also be given to data representativeness, comparability, and completeness.

- Representativeness is a quality characteristic. For most water monitoring studies, it should be considered a goal to be achieved rather than a characteristic which can be described in quantitative terms. An example of the need for representativeness is in the planning for the collection of surface water samples from a stream and the subsequent use of the data for determining wasteload allocations. The question to be addressed is how the sample will be collected to ensure its relationship to the stream characteristics (i.e., the taking of grab samples in a restricted zone of the stream compared to a complete transect sampling).

- Comparability is also a quality characteristic which must be considered in study planning. Depending on the end use of data, comparability must be assured in the project in terms of sampling plans, analytical methodology, quality control, data reporting, etc. For example, a comparability question would be whether analysis based on different portions of fish are comparable (i.e., whole versus edible portions).

- Completeness is a measure of all information necessary for a valid scientific study. A useful way to evaluate completeness is to carefully compare project objectives with the proposed data acquisition and resulting potential "short falls" in needed information. Generally, it is not useful to try and measure this in quantitative terms for most water monitoring projects.

12. Sampling Procedures

For each environmental parameter or parameter group to be measured, a complete description of the sampling procedure must be documented. Included as vital elements in the sampling documentation should be: inclusion of specific sampling procedures (by reference to Standard Operating Procedures or by detailed descriptions of state-of-the-art methods, where used); flow diagrams or tracking mechanisms to chart sampling operations; and descriptions of sampling devices, sampling containers, preservation techniques, sample holding times and sample identification forms.

13. Sample Custody Procedures

Sample custody is a vital aspect of any monitoring program generating data which may be used as evidence in a court of law. In this regard, proper procedures for the acquisition, possession, and analysis of samples for documenting violations of State and/or Federal regulations and/or statutes are vital to the acceptance of such data in court. This area is generally referred to as the "chain-of-custody of samples".

If the intended use of the data generated from this monitoring project is enforcement related (see Item 7B), then a detailed description of the sample handling procedures utilized in the field, as well as the laboratory, must be documented. This procedure may be made part of the project plan or, if documented in the Standard Operating Procedures (SOP) manual (both sampling and laboratory SOP's), it may be incorporated by reference.

When documenting the sample chain-of-custody procedures, the following information should be included:

1. Since chain-of-custody begins with the cleaning of the sample containers to be used, a written record of the laboratory's source and manner of preparation of all sample containers should be referenced. This should include the laboratory's quality control procedures for assuring that the "cleaned" containers are truly decontaminated.
2. A detailed description of how sample containers are handled (in both the field and laboratory) to prevent either inadvertent contamination or potential opportunities for tampering.
3. An example of the chain-of-custody form should be included with an explanation of the signing procedure.

14. Calibration Procedures and Preventive Maintenance

The purpose of this section is to document, by describing in detail or referencing the appropriate SOP, methods which are utilized to assure that field and laboratory equipment are functioning optimally. The frequency of application of these methods should also be appropriately recorded.

Exhibits 14.1 and 14.2 are examples of check lists for field and laboratory equipment.

An equipment log book is to be maintained in addition to the check list. The equipment log book should remain with the piece of equipment except when the equipment is sent out for repairs. The log book should contain records of usage maintenance, calibration, and repairs.

Exhibit 14.1

Field Equipment Check List Example

Automatic Sample	Task	Frequency
Battery	Clean and charge	After each sampling
Pump Tubing	Soak, scrub, rinse	After each sampling
Discharge Tube	Soak, scrub, rinse	After each sampling
Splash Shield	Scrub, rinse	After each sampling
Bottles	Clean, rinse, dry	After each sampling
Intake Nozzle	Disassemble, clean, rinse	After each sampling

Exhibit 14.2

Laboratory Equipment Check List Example

Absorption Spectrophotometer	Frequency	Identify Each Sample Number and Date
Calibrate against standard	Each nth determination	Standard number 5. 11/10/82

15. Documentation, Data Reduction and Reporting

The purpose of this section is to describe documentation, data reduction, and reporting:

A. Documentation - There must be adequate documentation available with all data. This is necessary to help in fully interpreting the data as well as to protect it against legal and scientific challenges. Records must be legible, complete and properly organized. In some cases, they must be protected, using a document control system.

In the Work/QA Project Plan, SOP's should be referenced or included which define the type of record to be maintained as well as indicating where and how records will be stored.

B. Data Reduction and Reporting - "Paper work" errors are commonly found in the calculations, reductions and transfer of data to various forms and reports and transmittal of data into data storage systems. Quality control procedures should be carefully designed to eliminate errors during these steps. Calculation procedures should be described, to the extent possible, in analytical SOP's. SOP's should be referenced in the Work/QA Project Plan which describe review and cross-check procedures for calculations. Also, the SOP's should completely cover the step-wise procedures for entering data onto various forms and into computer systems. In addition to handling data, procedures should cover routine data transfer and entry validation checks. Where data forms are used, they should be included in the SOP's.

16. Data Validation

Each program must establish technically sound and documented data validation criteria which will serve to accept/reject data in a uniform and consistent manner.

Data validation can be envisioned as a systematic procedure of reviewing a body of data against a set of established criteria to provide a specified level of assurance of its validity prior to its intended use.

Data validation is, of necessity, conducted "after the fact." It requires that the techniques utilized are applied to the body of the data in a systematic and uniform manner. The process of data validation must be close to the origin of the data, independent of the data production process, and objective in approach.

Criteria for data validation must include checks for internal consistency, checks for transmittal errors, checks for verification of laboratory capability, etc. These criteria involve utilization of techniques such as interpretation of the results of: external performance evaluation audits; split sample analyses; duplicate sample analysis (field and laboratory); spiked addition recoveries; instrument calibrations; detection limits; intra-laboratory comparisons; inter-laboratory comparisons; tests for normality; tests for outliers; and data base entry checks.

17. Performance and System Audits

Performance and systems audits are an essential part of every quality control program. A performance audit independently collects measurement data using performance evaluation samples. A systems audit consists of a review of the total data production process which includes on-site reviews of a field and laboratory's operational systems and physical facilities for sampling, calibration and measurement protocols.

To the extent possible, these audits should be conducted by individuals who are not directly involved in the measurement process. Audits serve three purposes:

(1) to determine if a particular group has the capability to conduct the monitoring before the project is initiated;

(2) to verify that the QA Project Plan and associated SOP's are being implemented; and

(3) to detect and define problems so that immediate corrective action can begin.

A Work/QA Project Plan should specify who will conduct the audit, what protocol will be used, what the acceptance criteria will be and to whom the audit reports will go. Generally, the dates for conducting the audits should be listed unless it is decided to conduct these unannounced. Performance evaluation samples produced by EPA can be used as a type of performance audit. These samples can also be obtained from the National Bureau of Standards, United States Geological Survey commercial sources or in-house sources. Generally, it should not be necessary to conduct these audits if the group being tested has successfully performed within the last 6 months for the particular parameters in question.

18. Corrective Action

A corrective action program, which must have the capability to discern errors or defects at any point in the project implementation process, is an essential management tool for both project coordination and Quality Assurance/Quality Control activities.

A plausible corrective action scheme must be designed to identify defects, tally defects, trace defects to their source, plan and implement measures to correct identified defects, maintain documentation of the results of the corrective process, and continue the process until each defect is eliminated.

Each organization must develop a corrective action protocol which is technically effective as well as administratively compatible.

19. Reports

Formal reports must be issued to inform appropriate management personnel of progress in the execution of the work plan. The reports should include an assessment of the status of the project in relation to the proposed time table. The reports should also address any results of ongoing performance and systems audits, data quality assessments and significant quality assurance problems with proposed corrective action procedures.

The final report shall be issued, consistent with the rationale for executing the Work/QA Project Plan. The report shall also include appropriate data quality assessment.

SECTION III

III. Work/QA Plan Short Form

Title Page

(Project Name)

(Responsible Agency)

(Project Officer's Signature) _____

(Project Officer's Name) _____

(Project Quality Assurance Officer's Signature)_____

(Project Quality Assurance Officer's Name)_____

1. Project Name: _____

2. Project Requested By: _____

3. Date of Request: _____

4. Date of Project Initiation: _____

5. Project Officer: _____

6. Quality Assurance Officer: _____

7. Project Description

   A. Objective and Scope Statement: _____

   _____

   _____

   _____

   _____

   _____

   _____

   _____

   B. Data Usage: _____

   _____

   _____

   _____

   _____

   _____

   _____

   _____

   _____

C. Monitoring Network Design and Rationale: _____

D. Monitoring Parameters and their Frequency of Collection : _____

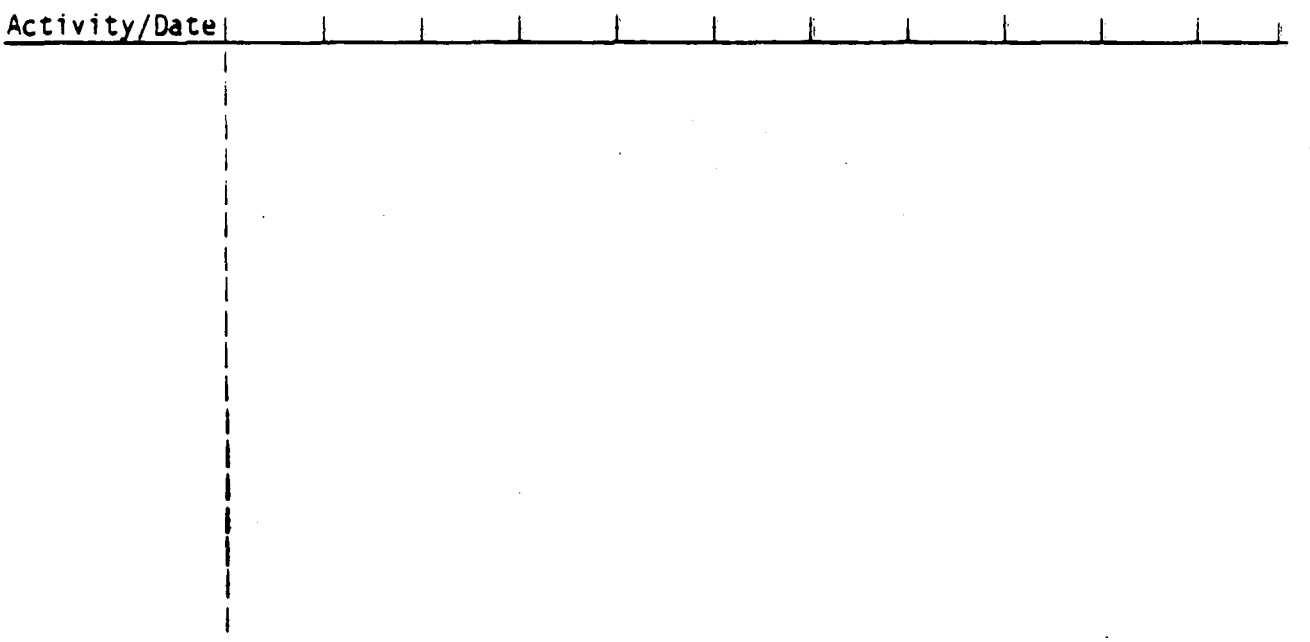
E. Parameter Table

Parameter	Number of Samples	Sample Matrix	Analytical Method Reference	Sample Preservation	Holding Time

8. Project Fiscal Information (Optional):

A. Survey Costs		
Salaries	_____	
Supplies	_____	
Equipment	_____	
Mileage	_____	_____
B. Laboratory Services		_____
C. Administrative Overhead		_____
D. Consultant Services		_____
Total Project Cost		_____

9. Schedule of Tasks and Products



10. Project Organization and Responsibility

The following is a list of key project personnel and their corresponding responsibilities:

_____ - sampling operations

_____ - sampling QC

_____ - laboratory analysis

_____ - laboratory QC

_____ - data processing activities

_____ - data processing QC

_____ - data quality review

_____ - performance auditing

_____ - systems auditing

_____ - overall QA

_____ - overall project coordination

(Note: an organizational chart should be supplied with this plan)

11. Data Quality Requirements and Assessments

Parameter	Sample Matrix	Detection Limit	Quantitation Limit	Estimated Accuracy	Accuracy Protocol	Estimated Precision	Precis Protoc
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							

Data Representativeness: _____

_____

_____

_____

_____

_____

Data Comparability:

Data Completeness:

12. Sampling Procedures:

13. Sample Custody Procedures:

14. Calibration Procedures and Preventive Maintenance:

15. Documentation, Data Reduction, and Reporting

A. Documentation:

B. Data Reduction and Reporting:

16. Data Validation:

17. Performance and Systems Audits:

18. Corrective Action: _____

_____

_____

_____

_____

_____

19. Reports: _____

_____

_____

_____

_____

_____

SECTION IV

Work/QA Project Plan

Site Specific Study on Little River
at Citiesburg, USA

Project Officer _____
T. A. Atwater

Quality Assurance Officer _____
J. R. Datar

Agency Director _____
C. T. Barfern

1. Project Name: Site Specific Study on Little River at Citiesburg, USA

2. Project Requested By: U.S. EPA

3. Date of Request: 1/82

4. Date of Project Initiation: 9/1/82

5. Project Officer: T. A. Atwater

6. Quality Assurance Officer: J. R. Datar

7. Project Description (Technical)

A. Objective and Scope Statement

The site specific criteria modification study at Citiesburg, USA is designed to investigate the impact of the Jandar Company discharge to Little River as related to cyanide. The effluent from Jandar Company flows through an outlet into Puddle Creek. The Creek confluence with Little River is approximately one-half mile from the Jandar discharge. Map 1 outlines the study area.

A preliminary site survey was conducted in 1981 to determine site applicability. Little River is bordered by a levee system. There are gates at the confluence with the Tuscon River to prevent the Tuscon River from causing backwater flooding.

B. Data Usage

The data collected in the study will be utilized to determine the impact of the cyanide contamination on the biota of the receiving stream. The data will be used to determine if a specific criteria could be set for cyanide in Little River.

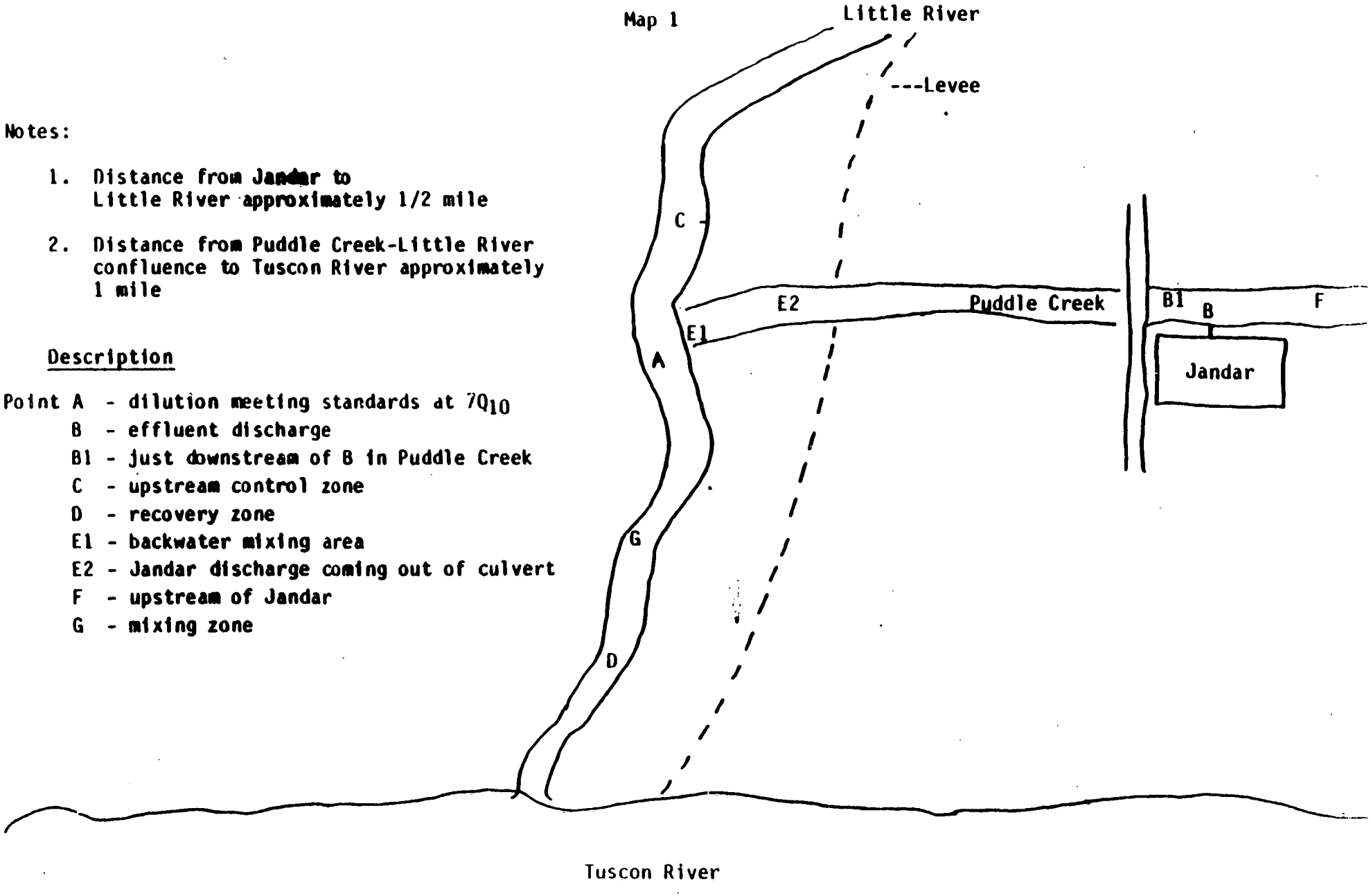
C. Monitoring Network Design and Rationale

Each section contains general information and a detailed description of the work effort.

1. Bioassay Toxicity Testing - General Information

Fish - Little River is best described as a "typical little stream". During the preliminary site inspection during 1981, the river near the confluence with Puddle Creek contained a riffle area. The remainder of the creek appeared to consist of a mud bottom. Conservation Commission personnel indicate the fisheries expected of a river such as Little River would likely support primarily minnows, suckers and chubs. During high water it is likely that Little River may be inhabited by any fish species found in the Tuscon River.

Map 1



Notes:

1. Distance from Jandar to Little River approximately 1/2 mile

2. Distance from Puddle Creek-Little River confluence to Tuscon River approximately 1 mile

Description

Point A - dilution meeting standards at $7Q_{10}$
B - effluent discharge
B1 - just downstream of B in Puddle Creek
C - upstream control zone
D - recovery zone
E1 - backwater mixing area
E2 - Jandar discharge coming out of culvert
F - upstream of Jandar
G - mixing zone

Fish available at the hatcheries for bioassay testing are: channel catfish, bluegill (juvenile) and fathead minnows. Toxicity data is available for bluegill and fathead minnows in EPA's Section 304 criteria guideline document; however, toxicity information is not available for channel catfish. Reported LC_{50} values for juvenile bluegill ranges from 74 to 180 ug/l cyanide. Juvenile fathead minnow LC_{50} values range from 81.5 to 230 ug/l.

Macroinvertebrates - In response to the types of macroinvertebrates that may be present in Little River, the Conservation Commission provided the following candidates:

mayflies, dragonflies, damselflies, caddis flies, mosquito midge and flies, snails, mollusks, scuds, water fleas, worms, water striders, etc. Reviewing the Section 304 toxicity information of the invertebrates mentioned above, only scud appears to have a comparable LC_{50} to the fathead minnow and bluegill. Sufficient quantities of scud may be available either in Little River or in the Tuscon River.

Recommendation - Use both fathead minnows and channel catfish as fish bioassay species and scud as the macroinvertebrate organism.

Conditions Applicable to all Bioassay Testing

Control Site Water - Control site water shall consist of river water obtained upstream from where any effect of the effluent could occur. The reference to control site water used in any bioassay study shall not consist of control site water influenced by runoff conditions. Control site water influenced by runoff used in any aspect of the bioassay tests may be high in turbidity, suspended solids, nutrients and other nonpoint related pollutants. A back-up system for storing the control site water needed during the bioassay tests should be made available for water storage prior to the occurrence of a runoff event.

If no capabilities are available for storing water, the bioassay test should be terminated and resumed when background water quality persists.

Bioassay Testing - All references to bioassay testing shall be describing 96-hour toxicity testing using a flow-through diluter unit. Standard flow-through tests will be conducted following ASTM and APHA standard methods, as modified by the protocol used during the winter. This modification essentially involves the spiking of testing aquaria to approximately one-half of nominal concentrations at the onset of the test.

Cyanide Toxicant - The reagent, NaCN, shall be used to increase the cyanide concentration in test solutions. Duplicate tanks of each studied toxicant concentration and control will be run.

The spiking solution for all bioassay tests should be prepared in distilled or deionized water.

Acclimation - All organisms used in the bioassay testing shall be acclimated at least 24 hours prior to the beginning of the bioassay test. The acclimation will be in control site water unless otherwise specified.

Organisms - Ten representatives of each organism used in the bioassay tests will be contained in each tank.

Chemical Testing - Free cyanide will be measured on-site with a cyanide specific electrode at least three times daily in each tank.

Blank samples and standardized solutions will be run prior to each analysis for calibration. Time, temperature and pH measurements will be recorded concurrently with each cyanide analysis. Dissolved oxygen measurements will be checked at least twice daily in all tanks for diurnal variations.

Once during each bioassay test, quality assurance samples of the stock toxicant cyanide spike solution and all calibration curve solutions will be analyzed in the laboratory for free cyanide and pH. Calibration curve sample collection should coincide with an on-site determination.

Note: The stability of the stock cyanide solution should be checked to ensure that no decomposition, degradation or volatility is occurring.

Summary of Bioassay Testing

Bioassay testing will consist of:

Reconstituted laboratory water spiked with NaCN.
Screening test using control site water spiked with NaCN.
Definitive test using control site water spiked with NaCN.
Screening test using effluent.
Definitive test using effluent.

2. Stream Biology Sampling

a. Benthos
b. Periphyton (Diatoms)
c. Fish
d. Macroinvertebrates

Purpose - The purpose of the stream biological sampling is to identify the biological integrity of the stream reach under study and to determine to what extent the wastewater discharge impacts the stream's biology through population comparisons.

Study Area - The stream reach being studied is along Little River in the vicinity where Puddle Creek enters the Little River. The Creek to which Jandar discharges, as a surface water of the state, is protected by the general water quality criteria. The concern of the water quality in the Creek is to protect against the toxicity to aquatic life and wildlife. However, since the Creek is probably intermittent and is probably not suitable for the maintenance of aquatic life, the only concern should be that toxics in acute toxic concentrations are not being found in the Creek.

Little River, however, has a sustained flow and does support aquatic life. Benthos, macroinvertebrates, periphyton and fish distributions should assist in determining any impact from the Jandar discharge to the biological community. Four zones will be defined and will be used to describe stream areas in which the biological evaluation will occur.

The four zones or stream study areas are described below and are depicted in Map 1.

Control Zone - Stream area upstream from any impact from the wastewater discharge (pt. C on Map 1).

Impact Zone - Stream area highly influenced by the effluent. Preferably the area where the effluent has been diluted with stream flow expected under worst case 7Q/10 conditions. (Dependent upon plant discharge and current Little River flows.)

Mixing Zone - Between the impact zone and recovery zone.

Recovery Zone - Stream area in which the effluent has mixed completely with stream flow and water quality has returned to control zone conditions.

Note: Approaching the mouth of Little River a habitat change can be expected. Therefore if the recovery zone is deemed to be far enough from the other zones where a habitat change could be expected, an additional site in the mixing zone rather than the recovery zone should be considered.

Identification of the Study Zones

The boundary limits of each of the biological study zones should be characterized. Changes in flow, temperature and biological

activity may cause the boundaries of each zone to greatly fluctuate. Therefore, weekly sampling during the biological sampling is recommended to identify and characterize each zone.

Specific conductance, pH, temperature, free cyanide, D.O. and flow measurements can be used to help identify the zones.

3. Chemical Sampling

- Preliminary Chemical Testing
- Chemical Characterization of the Impact of the Effluent
- Sediment Sampling

a. Preliminary Chemical Testing

The purpose of performing preliminary chemical testing is to answer the following questions:

1) Is the Creek above the discharge being affected by any upstream dischargers?

2) What are the constituents of the Jandar discharge and at what concentrations are these being discharged? Is cyanide the only toxic of concern?

3) What degradation occurs to the discharge between the point of entry into the drainage ditch and where it enters Little River?

4) Is the control zone in Little River being affected by any dischargers?

The answers to the above questions should be obtained prior to the start of any further studies. The results of these analyses will direct chemical analyses identified during the bioassay testing.

b. Chemical Characterization of the Impact of the Effluent

In order to chemically characterize each of the zones selected for biological sampling, grab samples will be collected in triplicate from each zone. In addition, a grab sample of the "fresh" effluent will be collected for analysis. The full scan should be performed initially, subsequent chemical characterization may be performed with a reduced parameter list.

c. Sediment Sampling

Sediment samples will be collected at the four zones selected for biological sampling and at points F, B1 and E1 on Map 1.

D. Monitoring Parameters and Their Frequency of Collection

1. Bioassay Toxicity Testing in Detail

a. Reconstituted Laboratory Water Spiked with NaCN.

1) Description

The purpose of this test is to compare toxicity results using reconstituted laboratory water with reported literature LC_{50}'s.

2) Additional Chemical Testing

Laboratory measurements for free cyanide and pH will be conducted for quality assurance. Three samples will be collected from each cyanide concentration and the control used in the toxicity testing at day two and day four of the bioassay. The tank of each concentration with a replicate analysis will be alternated.

Other parameters could be measured during day two and day four not as quality assurance analyses but to characterize the composition of the reconstituted water. Only samples from the control tanks would be needed for analysis of these other parameters since the only difference between the tanks is the cyanide concentration.

b. Bioassay Toxicity Test Using Control Site Water Spiked with NaCN.

1) Description

Screening Test - A wide range of cyanide concentrations will be utilized in the screening test to provide a gross 96-hour LC_{50} estimate. In selecting the range of cyanide concentrations to be used, literature reported values for the tested organisms as well as the results from the reconstituted laboratory water bioassay should be considered.

Definitive - Based on the results of the screening test, the appropriate range of cyanide concentrations will be used.

2) Additional Chemical Testing During the Screening and Definitive Tests Laboratory measurements of free cyanide and pH will be conducted for quality assurance. Three samples will be collected from each cyanide concentration and the control used in the toxicity testing during day

two and day four of the bioassay. The tank of each concentration with a replicate analysis will be alternated. The collection of the quality assurance samples will be taken concurrently with the on-site cyanide analysis.

Laboratory analyses from samples collected during day two and day four of the bioassay testing will also be conducted based on the results of the preliminary chemical testing -- described in Section 3. Samples only need to be analyzed from the control tanks since the only difference among the tanks will be the cyanide toxicant concentration.

c. Bioassay Toxicity Test Using Control Site Water - Effluent and NaCN Spike (if necessary)

1) Description

The purpose of this bioassay test is to determine the toxicity of cyanide in the effluent. Synergistic or antagonistic effects to the toxicity of cyanide may be caused by other pollutants contained in the effluent. In addition, other pollutants in the effluent may exert toxicity greater than that of cyanide.

Toxic concentrations of pollutants other than cyanide should be tested for prior to the start of this bioassay test. This testing has been identified in the preliminary chemical testing in Section 3 of this report.

The percent mixture of control site water and effluent needs to be evaluated. Discharge permit effluent limitations assume no dilution in the Creek and no degradation of the cyanide. Thus, the assumption is that under worst case conditions, the characteristics of the effluent at the point of discharge to the Creek is the same as that which enters Little River. The effluent is discharged in pulses from the treatment system which is operated during two work shifts. Thus, a 24-hour continuous discharge is not to be expected. The study using the effluent should be designed to utilize "fresh" effluent being discharged to the drainage ditch during the two work shifts. During the plant's off-hours, stored effluent should be used in the bioassay test.

The estimated $7Q_{10}$ flow at Little River is 2 cfs. According to Water Quality Standards, only 25% of the volume of the receiving stream may be used for the mixing zone. Thus, .5 cfs of Little River is used for dilution. Design flow at Jandar is .570 mgd (.88 cfs). Average monthly plant flows

from Discharge Monitoring Reports show approximately one-half of the design flow is being discharged (.44 cfs).

The suggested worst case percentage mixture of control site water to effluent to be used in the bioassay test is 1:1.76. However, it is also suggested that further information from files be investigated to substantiate this. In addition, the cyanide concentration in the effluent may dictate the percentage mixture of control site water-effluent. However, that cannot be determined until initial testing results are available.

Screening Test - The screening test will use a varying range of cyanide concentrations. The results may influence the percent mixture of effluent -- control site water to be used.

Definitive Test - The definitive test will be based on the results of the screening test.

2) Additional Chemical Testing During Bioassay Test Using Control Site Water - Effluent - Cyanide Spike (if necessary)

Laboratory measurements of free cyanide and pH will be conducted for quality assurance. Three samples will be collected from each cyanide concentration and the control used in the toxicity testing during day two and day four of the bioassay. The tank of each concentration with a replicate analysis will be alternated. The collection of the quality assurance samples will be taken concurrently with an on-site cyanide analysis.

Since there may be possible interference from other pollutants in the effluent, the composition of these other pollutants during the bioassay test should be well characterized. Daily triplicate samples should be taken from the control tank and highest cyanide concentrations tanks and analyzed for total cyanide, cyanide amenable to chlorination, free cyanide, and other constituents determined from the preliminary chemical testing - Section 3.

2. Biological Sampling in Detail

a. Benthic Macroinvertebrates

The mud bottom of Little River makes benthic sampling for macroinvertebrates feasible. Zones determination may be assisted by preliminary investigation of the benthos used in conjunction with the chemical characterization of the zones. Benthic samples should be collected from each zone.

b. Periphyton (Diatoms)

During the macroinvertebrate sampling, four periphyton samplers will be placed in each zone for a two to four week period. Periphyton includes zoogleal and filamentous bacteria, attached protozoa, rotifers, and algae, and also the free-living microorganisms found swimming, creeping or lodged among the attached forms. These communities of microorganisms are greatly influenced by water quality and are very useful in assessing the effects of pollutants on lakes and streams.

The numbers and kinds of common non-diatom species (cells/m^2) will be reported. Samples will be cleared of all non-diatoms and permanent slides of diatoms will be made. Diatom species, numbers and diversity will be determined.

c. Fish Sampling

Electrofishing and seining will be conducted for in each zone. Three trips will be made through each zone. Fish will be identified to species and reported as catch per unit effort and relative abundance. Ideally low flow conditions should prevail. The Conservation Commission will perform the fish biological sampling.

Due to the size of the stream, small frame nets and other techniques may be employed for obtaining fish sampling data.

d. Macroinvertebrates

For the macroinvertebrate sampling, the use of Hester-Dendy samplers will provide satisfactory substrate for colonization of known sensitive species which can be identified in a cost-effective manner. Five samplers will be placed in each zone to determine field variability and allow for statistical comparisons between zones. The samplers will remain in situ for six weeks. The need for Hester-Dendy samplers in all zones should be evaluated. The riffle area in the control zone may be a naturally suitable substrate for colonization as well as the bridge approximately 400 yards downstream from the confluence with the Creek.

3. Chemical Sampling

a. Preliminary Chemical Testing

The following sites will be sampled -- Points C, E1, B, B1, F (See Map 1).

Each sample will be analyzed for

BOD, COD, TOC
D.O., specific conductance, pH, temp.] Field measurement
chromium
total cyanide, cyanide amenable to chlorination, free cyanide
NH_3
flow

b. Chemical Characterization of the Impact of the Effluent

The zones selected for biological monitoring will be sampled. The samples will be analyzed for

BOD, COD, TOC
D.O., specific conductance, pH, temp.] Field measurement
chromium
total cyanide, cyanide amenable to chlorination, free cyanide
NH_3
flow

c. Sediment Sampling

The zones selected for biological monitoring will be sampled and analyzed for chromium, total cyanide, free cyanide and cyanide amenable to chlorination.

E. Parameter Table

Parameter	Number of Samples	Sample Matrix	Analytical Method Reference*	Sample Preservation	Holding Time
Free cyanide	300	water	335.2	**	**
Total cyanide	300	water	335.2	**	**
Amenable cyanide	300	water	335.1	**	**
BOD	50	water	405.1	**	**
COD	50	water	410.4	**	**
TOC	50	water	415.1	**	**
NH_3-N	50	water	350.1	**	**
Chromium	50	water	#218	**	**
Free cyanide	25	sediment	335.2	**	**
Total cyanide	25	sediment	335.2	**	**
Amenable cyanide	25	sediment	335.1	**	**
Chromium	25	sediment	#218	**	**
Free cyanide	25	sediment leachate	335.2	**	**
Total cyanide	25	sediment leachate	335.2	**	**
Amenable cyanide	25	sediment leachate	335.1	**	**
Chromium	25	sediment leachate	#218	**	**

* - Sediment and leachate sample preparation documented in Laboratory Methods Manual.

** - As specified in procedure EPA Methods for Chemical Analysis of Water and Wastes.

Project Fiscal Information (Optional)*

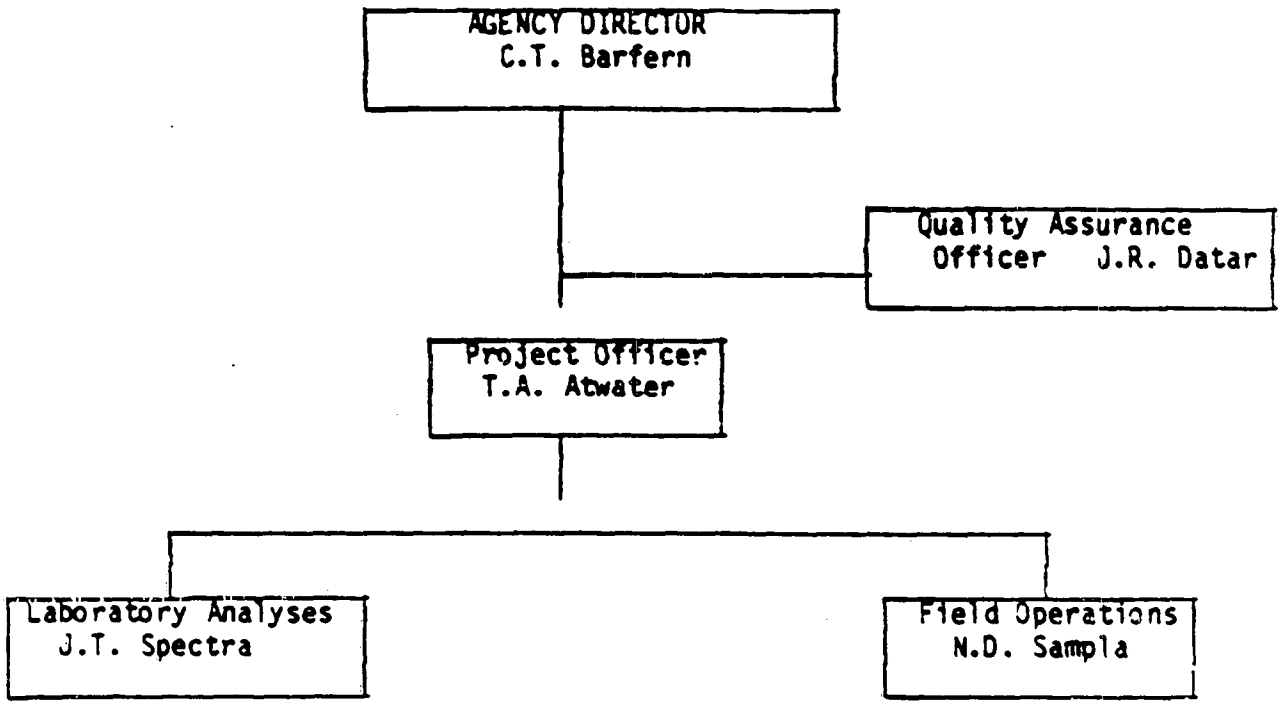
A.	Analytical	$ 0000
B.	Supplies	0000
C.	Mileage	0000
D.	Per diem	0000
E.	Man-hours	0000
	1) Field	
	2) Laboratory	
	3) Clerk/Secretary	
		$ 0000
	General and Administrative	0000
	Total	$ 0000

*Note: Fiscal information included in related grant/contract.

9. Schedule of Tasks and Products

	1981 Oct	Nov	Dec	1982 Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct
1. Project request				X									
2. Project plan review									→|				
3. Project plan finalized										→|			
4. Field reconnaissance	X												
5. Sample collection											→|		
6. All lab. analysis completed and submitted to project officer											→|		
7. Data entry into STORET													→|
8. Interim project report											X	X	
9. Final project report												X	

10. Project Organization and Responsibility



Contacts

U.S. E.P.A.	E.M. Here
Jandar Company	J.K. Ackle
State Enforcement	B.G. Getter

11. Data Quality Requirements and Assessments

Detection Limits and Quality Assurance Objectives

Parameter	Sample	Detection Limit	Accuracy	Precision	QA Protocol
Free cyanide	all	0.02 mg/L	85-90% recovery	± 0.005	1 duplicate/10 samples
Total cyanide	all	0.02 mg/L	85-90% recovery	± 0.005	1 standard addition/10 samp 1 standard/day
Amenable cyan ide	all	0.02 mg/L	85-90% recovery	± 0.005	
Chromium	all	0.01 mg/L	Bias % + 30	± 0.008	1 duplicate, 1 standard, 1 spike/20 samples
BOD	all	5 mg/L	____	± 20%	1 duplicate/10 samples
TOC	all	5 mg/L	Bias % + 15	± 5 mg/L	1 duplicate/10 samples 1 standard addition/15 samp 1 standard/10 samples
COD	all	5 mg/L	1% relative error	± 5 mg/L	1 duplicate/10 samples 1 standard addition/15 samp 1 standard/10 samples
NH_3-N	all	0.01 mg/L	1% relative error	± 0.005 mg/L	1 duplicate, 1 standard, 1 spike/20 samples

Note: The example shown here is incomplete as specified in Section III - #11. It does not contain all the data qualifiers desired including a discussion of representativeness etc.

Careful sample site selection was a primary consideration to attempt to assure the maximum possible representativeness of the collected samples. The stream sample sites (see Map 1) were selected to best represent points of suspected drainage impact.

The biological zones were selected to compare normal biotic stream background to stream biota in the potentially impacted area.

12. Sampling Procedures

Reference - Field Operations Section
Procedure Manual
(Revised and Approved 9/10/81)

13. Sample Custody Procedures

Not Applicable

14. Calibration Procedures and Preventive Maintenance

Field Equipment

Reference - Field Equipment Logs
- pH Meter
- D.O. Meter
- Price AA Meter

Laboratory Equipment

Reference - Procedure Manuals
- Nutrient Analysis Section
- Metals Analysis Section

15. Documentation, Data Reduction and Reporting

A. Documentation

Reference - Laboratory Notebook

- Nutrient Analysis Section
- Metals Analysis Section

B. Data Reduction and Reporting

Reference - Procedure Manual

- Nutrient Analysis Section
- Metals Analysis Section

16. Data Validation

The validation of data is the prime responsibility of J.T. Spectra utilizing methods documented in the Procedure Manuals referenced in Section 15.

Final validation is the responsibility of the Q.A. Officer.

17. Performance and Systems Audits

The laboratory has participated in several EPA WS and WP performance evaluation studies. Records are available on all series supplied to date.

18. Corrective Action

The corrective action mechanism is defined in the Procedure Manuals cited in Sections 12 and 15.

19. Reports

Interim reports will be issued twice during the course of the study. Final report is the responsibility of the Project Officer (See Section 9).

APPENDICES

Appendix A

QUALITY ASSURANCE PROJECT PLAN
TASK FORCE MEMBERS

EPA Headquarters

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Region III

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Appendix B

Current Implementation of the OW Combined Work/QA Project Plan Guidance
Summary as of April 29, 1983

General

Planned and on-going applications of the guidance include uses to meet FY83 and FY84 State grants as well as independent State monitoring efforts and State/Federal contractor activities. Program area applications include Water Programs, Superfund, and RCRA.

Specific

Region I

Applications survey to be conducted June 6-10 by Martin Brossman, QA Officer, OWRS and Warren Oldaker, QA Officer, Region I in each State. Briefings of and meetings with State Water Division Directors and State Laboratory Division Directors will be conducted to resolve applications.

Region II

Series of applications planned in New Jersey with the efforts lead by an EPA Regional and State member of the guidance task force development team - Jerry McKenna, QA Officer, Region II and Stephen Jenniss, N.J., State Water Quality Assurance Coordinator.

(1) New York Bight monitoring surveys to be conducted by EPA Region II staff between June and September 1983. These are a series of water monitoring surveys. Sampling will be conducted using EPA helicopter. OW QA guidance will be tested in a typical intramural study of water quality.

(2) New York Bight monitoring survey to be conducted by EPA-OWRS contractor in August 1983. This will be a comprehensive study aboard EPA vessel "Antelope" and will be carried out with EPA contractor sampling personnel and laboratories. OW QA guidance will be tested in a typical contractor study of water quality.

(3) Several hazardous waste site investigations to be conducted this summer by the NUS Corp. Field Investigation Team (FIT). This contractor is under national contract and has personnel assigned to Region II. Analytical support for studies will probably be provided by an EPA contract analytical laboratory. OW QA guidance will be tested in a non-water monitoring program area.

(4) New Jersey use in State operated water monitoring projects. The New Jersey Department of Environmental Protection (NJDEP) will apply the guidance to a number of specific intensive water monitoring surveys and to an ambient, fixed monitoring network survey. These surveys will be conducted during the summer of 1983. Also planned is use of the guidance for potable water monitoring (surveillance monitoring) of water supplies conducted directly by NJDEP for typical State programs. Analytical support will be provided by the New Jersey Department of Health.

Region III

Applications in Region III are lead by an EPA Regional and a State member of the guidance task force development team - Charles Jones, QA Officer, Region III, and Paul Baker, Pa. Quality Assurance Officer.

The State of Pennsylvania is currently utilizing the guidance document in its development of its State-wide multimedia Quality Assurance Program and plans to apply the guidance to some stream surveys in its new FY84 program. (Pa. State begins its Fiscal Year in July). The guidance document is serving a new purpose in Pa. Paul Baker leads a State Quality Assurance Task Force involving all environmental programs with representation from the laboratory and the separate Bureaus. This task force is developing a State QA Program Document for the State Department of Natural Resources. The State document will conver all media. The OW QA guidance doucment is being utilized as a reference in developing the State QA program.

The State of Maryland will be utilizing the OW QA guidance document to meet its FY83 grant program requirements. This effort is guided by the Region III QA Officer, Charles Jones, working with the State Representatives.

The State of Virginia is currently utilizing the OWQA guidance document to meet its FY83 grant program requirements. (Al Willett, Director, Surveillance Division, VA State Water Control Board met with Martin Brossman, QA Officer, OWRS and Charles Jones, QA Officer, Region III at EPA Headquarters on April 19, to work out implementation plans). As Virginia progresses with its water program implementation applications we also expect applications to RCRA and Superfund.

Region V and VI

A series of applications are anticipated in these two regions. Status will be reported in the next update.

Region VIII

An intensive water monitoring survey is being planned by the States of Iowa and South Dakota and the U.S. EPA with guidance from task force development team member Dr. Roger Splinter. This monitoring program involves agencies with monitoring and analytical responsibility in the two States and, because of the States geographical location, two EPA Regions (VII and VIII). The monitoring program is being planned for the Big Sioux River in Northwest Iowa and will include biological monitoring. Preliminary planning will be completed in mid May and the OW QA guidance document will be utilized to develop the work/QA plan.

APPENDIX C

OW Work/QA Project Plan Guidance Document Applications

The development of the OW Work/QA Project Plan Guidance Document involved a series of critiques and applications to evaluate the viability of the guidance. In addition, in April 1983, a formal pilot implementation program was initiated by the development task force. The plan here was to seek as diverse a set of applications as feasible to be followed up by a formal critique questionaire in August of 1983 and a workshop in October 1983. Inputs from these activities provided the basis for the current form of the guidance document and the development plans for FY84.

The following listing of applications of the guidance document in the pilot imlementation period is provided to assist future users of the guidance. Direct inquiries can be made to the responsible contact in regard to the application. Effective dialogue between users can both facilitate technical development of new plans and provide guidance in handling related administrative/management issues.

Survey of Pilot Application of Office of Water
Quality Assurance Guidance Document

1. Title of Project or Document

Department of Conservation and Cultural Affairs (U.S. Virgin Islands)
Territorial Pollution Control Discharge Elimination System (TPDES) QA
Project Plan

Area of Application

"Generic" Plan for DCCA's Compliance Sampling Inspections of Permitted
Facilities

Date of Application

Fall 1983

Contact (Name, title, address, telephone)

Austin L. Moorehead
Quality Assurance Officer
Dept. of Conservation and Cultural Affairs
Building III, Apartment 114
Water Gut Homes
Christiansted, St. Croix
U.S. Virgin Islands 00820

Summary of Document

Plan covers all sampling and analytical activities to be undertaken by DCCA in support of TPDES program. Plan is "Generic" because it covers repeated sampling surveys, not just one event. All parameters, required on TPDES permits are covered.

Survey of Pilot Application of Office of Water
Quality Assurance Guidance Document

2. Title of Project or Document

Dioxin Survey of 80 Lister Avenue Site In Newark, N. J.

Area of Application

Used by NUS Corp. Field Investigation Team (FIT) and Region II Surveillance and Monitoring Branch for Dioxin Survey

Date of Application

Spring 83

Contact (Name, title, address, telephone)

Mark Haulenbeek
Environmental Scientist
Environmental Protection Agency
Edison, N. J. 08837
FTS 340-6776

Summary of Document

QA Project Plan done for Dioxin Site Investigation of Streets, Soil and Fish from Area of 80 Lister Ave. Work Was Done by EPA Region II, FIT and CLP (Superfund) Lab Contractor

Survey of Pilot Application of Office of Water
Quality Assurance Guidance Document

3.

Title of Project or Document

Hudson River PCB Study of Hotspots

Area of Application

Sampling and Analysis of Upper Hudson River Sediments to Determine Change over 5 Year Period in PCB Concentrations

Date of Application

Summer 1983

Contact (Name, title, address, telephone)

Rollie Hemmett
Physical Scientist
U.S. Environmental Protection Agency
Region II
Edison, New Jersey 08837
FTS 340-6687

Summary of Document

Study and QA Project Plan prepared and used jointly by EPA Region II, NUS Corp. FIT and REM Teams. Samples were analyzed under special CLP (Superfund) Contract.

Survey of Pilot Application of Office of Water
Quality Assurance Guidance Document

4.

Title of Project or Document

Summer 1983 New York Bight Survey

Area of Application

Marine Monitoring Study - NOAA/EPA Region II/HDQTRS (OWRS) Contractor

Date of Application

Summer 1983

Contact (Name, title, address, telephone)

Robert Shokes
Marine Oceanographer
JRB Associates
La Jolla, California
619 456-6632

Summary of Document

Study & QA Project Plan for study done in support of Region II's Ocean Dumping Program. 12 mile, 15 mile Mud Dump and NOAA Sites were studied.

Survey of Pilot Application of Office of Water
Quality Assurance Guidance Document

5. Title of Project or Document

Quality Assurance/Work Plan Biological Survey of the Big Sioux River

Area of Application

Intensive Stream Survey to Determine Point Source Impacts on Biological Community.

Date of Application

June 1983

Contact (Name, title, address, telephone)

Project Coordinator
Mr. Morris Preston
Iowa Dept. of Water, Air and Waste Management
H.S. Waller Bldg.
900 East Grand
Des Moines, Iowa 50319
(515) 281-8877

Summary of Document

The document addresses an intensive stream survey carried out by several agencies (State and Federal). Addresses items in the format of the Guidance Document. The unique feature of this document is the fact that several different agencies had responsibilities.

Survey of Pilot Application of Office of Water
Quality Assurance Guidance Document

6. Title of Project or Document

Quality Assurance/Work Plan
Analytical Services: Remedial Investigation at the New Brighton/Arden Hills Multi-Point Source Site

Area of Application

Hazardous Waste Site Cleanup
Describes QA/Work Plan for all Analytical Services and Sampling

Date of Application

Projected 12/83 - 5/84

Contact (Name, title, address, telephone)

R.C. Splinter, Assoc. Director
University of Iowa Hygienic Laboratory
Oakdale Campus
Iowa City, Iowa 52242
(319) 353-5940

Summary of Document

The document is in conformance with the Guidance Document. All items are addressed. Both field and laboratory activities are covered. Where appropriate, lengthy analytical procedures are referenced to laboratory procedures manual.

Survey of Pilot Application of Office of Water
Quality Assurance Guidance Document

7. Title of Project or Document

Quality Assurance/Work Plan Rock Creek Environmental Study

Area of Application

Intensive Stream Survey

Date of Application

November 15, 1983

Contact (Name, title, address, telephone)

Project Coordinator
Ms. Cynthia Cameron
Iowa Dept. of Water, Air and Waste Management
900 East Grand
Des Moines, Iowa 50319

Summary of Document

Document is written in the Guidance Document format. Joint planning for Work/Plan QA Plan done between laboratory, field and program planning personnel. Document addresses a chemical and biological study of a stream segment to determine multiple source impact on stream quality.

Survey of Pilot Application of Office of Water
Quality Assurance Guidance Document

8. Title of Project or Document

QA/Work Plan: Industrial Waste Survey for the New Jersey Statewide Pretreatment Monitoring Program (Draft)

Area of Application

Industrial Waste Survey

Date of Application

Begin approx. 1/84

Contact (Name, title, address, telephone)

Robert Hirst, DWR QAO
NJ DEP, DWR, CQA
CN-029
1474 Prospect St.
Trenton, N. J. 08625
609-292-3950

Summary of Document

Determination of impacts of toxic industrial wastes on biological treatment processes at POTWs. Includes sampling of industrial discharges to municipal systems, POTW influents, effluents, and sludges

Survey of Pilot Application of Office of Water
Quality Assurance Guidance Document

9. Title of Project or Document

QA/Work Plan for Compliance Monitoring (Draft) NJ DEP, DWR, Emergency Response/Compliance Monitoring (ERCOM) Unit

Area of Application

NJ Pollutant Discharge Elimination System (NJPDES) Compliance Monitoring

Date of Application

10/1 - 9/31 every fiscal year

Contact (Name, title, address, telephone)

Christopher Schiller, Project Officer
NJ DEP, DWR, ERCOM
CN-029, 25 Artic Pkwy.
Trenton, N. J. 08625 609-292-0427

Robert Hirst, DWR QAO
NJ DEP, DWR, OQA
CN-029, 1474 Prospect St.
Trenton, N. J. 08625 609-292-3950

Summary of Document

24-hour composite sampling plan for compliance with NJPDES (permits)

Survey of Pilot Application of Office of Water
Quality Assurance Guidance Document

10. Title of Project or Document

Compliance and Investigative Monitoring for the New Jersey Water Pollution Control Act and the New Jersey Safe Drinking Water Act. (Draft)

Area of Application

Water Pollution Compliance Monitoring

Date of Application

Continuous

Contact (Name, title, address, telephone)

Eugene Roche, Project Officer
NJ DEP, DWR, Enforcement Element
CN029, 1474 Prospect St.
Trenton, N. J. 08625 609-984-5720

Robert Hirst, DWR QAO
NJ DEP, DWR, OQA
CN029, 1474 Prospect St.
Trenton, N. J. 08625 609-292-3950

Summary of Document

(1) Grab and 4-hour composite sampling for compliance with NJPDES permit and conditions

(2) Complaint investigation sampling

Survey of Pilot Application of Office of Water
Quality Assurance Guidance Document

11. Title of Project or Document

QA Plan for Monitoring and Analytical Activities to Evaluate Selected Pollutants in the Delaware River in the vicinity of Philadelphia, PA.

Area of Application

Evaluate potential difference in surface water quality between high and low tidal stages of the Delaware River. Data needed to predict effectiveness of potential raw water intake options for drinking water.

Data at Application

Sept. - Oct. 1983

Contact (Name, title, address, telephone)

Catherine Campbell
Project Officer
USEPA
Washington, DC 20460
(202) 382-2733

John Richards
Task Manger
Versar Inc.
6850 Versar Center
Springfield, VA 22151

Summary of Document

Monitoring and analytical support involved influent, effluent, sludges and air emissions. Sampling included wide range of organics and metals. Tidal, temperature and conductivity measurements also made.

Survey of Pilot Application of Office of Water
Quality Assurance Guidance Document

12. Title of Project or Document

QA/Work Plan: Water Quality Survey of the Passaic River

Area of Application

Comprehensive water, sediment and biological sampling

Date of Application

This project was initiated in August 1983.

Contact (name, title, address, telephone)

Dr. Shing-Fu Hsueh, Chief, Bur. of Systems Analysis (Project Officer)
NJ DEP, DWR
CN-029, 25 Artic Pkwy.
Trenton, N. J. 08625

Robert Hirst, DWR QAD
NJ DEP, DWR
CN-029, 1474 Prospect St.
Trenton, N. J. 08625

Summary of Document

Sampling of surface waters, sediments, periphyton, macrophytes, and point sources. Data generated will be used in the development of a new model for the basin.

Survey of Pilot Application of Office of Water
Quality Assurance Guidance Document

13. Title of Project or Document

QA/Work Plan: Allentown Lake Water Quality Monitoring Survey

Area of Application

Impact of restoration project on water quality.

Date of Application

Sampling began in Summer, 1983 and will continue until 1985.

Contact (Name, title, address, telephone)

Debra Hammond, Sampling Project Coordinator
NJ DEP, DWR, Data Acquisition and Analysis Unit
CN-029, 25 Arctic Pkwy.
Trenton, N. J. 08625

Robert Hirst, DWR QAO
NJK DEP,DWR, OQA
CN-029, 1474 Prospect St.
Trenton, N. J. 08625

Summary of Document

Sampling of lake water and leachate from dredge spoils to monitor impacts of restoration project on water quality

Survey of Pilot Application of Office of Water
Quality Assurance Guidance Document

14. Title of Project or Document

QA/Work Plan: Landing Creek Intensive Survey

Area of Application

Intensive Survey (Water Sampling)

Date of Application

Sampling was initiated during the summer of 1983.

Contact (Name, title, address, telephone)

Paul Morton, Sampling Project Coordinator
NJ DEP, DWR, Data Acquisition and Analysis Unit
CN-029, 25 Arctic Pkwy.
Trenton, N. J. 08625

Robert Hirst, DWR QAO
NJ DEP, DWR, OQA
CN-029, 1474 Prospect St.
Trenton, N. J. 08625

Summary of Document

Surface water sampling to aid the Division in deciding to upgrade or eliminate a municipal discharge on Landing Creek. The data will also be used to develop a new model for the creek and a new wasteload allocation for the municipal facility.

Survey of Pilot Application of Office of Water
Quality Assurance Guidance Document

15. Title of Project or Document

QA/Work Plan: 1983 Rancocas Creek Intensive Survey

Area of Application

Intensive Survey (Fish Issue and Sediment)

Date of Application

Sampling was initiated during the summer of 1983

Contact (Name, title, address, telephone)

Barbara Kurtz, Sampling Project Coordinator
NJ DEP, DWR Data Acquisition and Analysis Unit
CN-029, 25 Artic Pkwy.
Trenton, N. J. 08625

Robert Hirst, DWR QAO
NJ DEP, DWR, OQA
CN-029, 1474 Prospect St.
Trenton, N. J. 08625

Summary of Document

Fish tissue and sediment sample analysis to determine the impacts of a heavy metals (Cr-tot & Cr+6) discharge in the Rancocas Creek. A ban on fishing in the lower segment of the Creek may be imposed if the data exhibits a need to take such action.

Survey of Pilot Application of Office of Water
Quality Assurance Guidance Document

16. Title of Project or Document

QA/Work Plan: Upper Lamington River Intensive Survey

Area of Application

Intensive Survey for model development

Date of Application

Sampling was scheduled to begin during late Fall of 1983

Contact (Name, title, address, telephone)

Paul Morton, Sampling Project Coordinator
NJ DEP, DWR, Data Acquisition and Analysis UKnit
CN-029, 25 Artick Pkwy.
Trenton, N. J. 08625

Summary of Document

Water quality and sediment oxygen demand monitoring to aid in the development of a WQ model for the Upper Lamington River and a wasteload allocation for a municipal sewage treatment plant on the segment.

Special Applications

The previous examples of applications of the GW Work/QA project plan guidance have been devoted to specific environmental monitoring tasks. The Pennsylvannia Department of Environmental Resources has also utilized the document; to assist in its environmenal training programs; establish priorities for development of SOP's; and develop a Bureau QA plan.

Examples follow in the format of pilot applications proceeding this section.

Survey of Pilot Application of Office of Water
Quality Assurance Guidance Document

Title of Project or Document

Department of Environmental Resources Standard Operation Procedure (SOP) Development

Area of Application

The document is being used to provide guidance in developing standard operating procedures and other necessary QA documents for a sound QA program.

Date of Application

Continuing

Contact (Name, title, address, telephone)

Paul Baker
QA Officer
PA DER, Bureau of Laboratories
P. O. Box 1467
Hbq. PA. 17120
(717)787-4669

Summary of Document

Utilizing the work/QA project plan guidance document, specific SOP's are developed which conform to acceptable department practice. Thus, in the future, QA project plans can be expeditiously developed by proper reference to the appropriate SOP. The following have been or are under development to date:

1. A department chain-of-custody SOP has been developed.

2. In development:

   a. A document to cover uniform sampling activities in the department.

   b. A document to cover laboratory analytical activities.

   c. A department sample shipment SOP.

Survey of Pilot Application of Office of Water
Quality Assurance Guidance Document

Title of Project or Document

Development Guide for Compliance Monitoring, Ambient Monitoring, Self Monitoring, and Special Surveys

Area of Application

All 106 and 205J activities of Clean Water Act

Date of Application

FY 84

Contact (Name, title, address, telephone)

Kenneth Walizer
PA DER, Bureau Water Quality Management
P.O. Box 2063
Hbq. PA 17120

(717) 787-8184

Summary of Document

The document in intended to cover compliance monitoring, ambient monitoring, self-monitoring activities and special surveys.

Survey of Pilot Application of Office of Water
Quality Assurance Guidance Document

Title of Project or Document

Bureau of Solid Waste Project Plan

Area of Application

Used by the Bureau in all its environmental monitoring activities including development of a Bureau specific project plan

Date of Application

FY 84

Contact (Name, title, address, telephone)

David M. Friedman
QA Officer
PA DER
Bureau of Solid Waste Management
P.O. Box 2063
Hbq. PA. 17120
(717) 787-7381

Summary of Document

Utilizing the work/QA project plan guidance document the Bureau has developed a Bureau specific project plan for its activities. This document includes references to specific methods, procedures and regulatory requirements under the appropriate section of the guidance document.

Survey of Pilot Application of Office of Water
Quality Assurance Guidance Document

Title of Project or Document

QA Training in Pennsylvania Department of Environmental Resources

Area of Application

Training for Environmental Monitoring

Date of Application

Continuing

Contact (Name, title, address, telephone)

Paul Baker, QA Officer
PA DER, Bureau of Laboratories
P.O. Box 1467
Hbg, PA. 17120
(717) 787-4669

Summary of Document

Document is used as part of a training package. The document provides an effective method for showing department employees (field, lab, management) the necessary elements to consider when carrying out environmental monitoring activities.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D C 20460

AUG 31 1984

OFFICE OF
RESEARCH AND DEVELOPME

SUBJECT: OWRS Guidance for Preparation of QA Project Plans

FROM: Stanley Blacker, Director
Quality Assurance Management Staff (RD-680)

TO: Martin W. Brossman, QAO
Office of Water Regulations and Standards (WH-553)

QAMS has reviewed the document "Guidance for Preparation of Combined Work/Quality Assurance Project Plans for Environmental Monitoring" (OWRS-QA-1, May 1984) and finds that it is an acceptable alternative to QAMS 005/80, "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans" (December 1980). Organizations preparing plans in accordance with OWRS/-QA-1 are considered to have satisfied EPA quality assurance program requirements for the preparation of QA Project Plans.

Substantial efforts on data quality objectives leading toward the development of improved guidance for preparation of QA project plans are underway. Because changes in existing guidance documents may be required, QAMS encourages all users of existing guidance to continue to use that guidance but to remain flexible to change.

QAMS appreciates the effort you and other members of your workgroup have put into the preparation of OWRS-QA-1. The document is a valuable addition to quality assurance guidance available within the Agency.